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# PATENT SPECIFICATION

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## PROVISIONAL SPECIFICATION.

### Improvements in or relating to Switch and other Cover-plates such as used in Conjunction with Flush-mounted and Surface-mounted Electrical Accessories.

We, JOHN ASHWORTH CRABTREE, of "Inverell", Rosemary Hill Road, Streetly, Sutton Coldfield, and BERNARD GOUGH HARRISON, of "Ambleside", Birmingham Road, Walsall, both British Subjects, do hereby declare the nature of this invention to be as follows:—

Where electric switches, coupling-sockets, bell-pushes and like accessories, or combinations of such accessories, are flush-mounted in metal or other boxes or surface-mounted in or upon wall-blocks or other foundations, the usual practice is to cover the mounted accessory or accessories by fixing a cover-plate or facing-plate to the front of the mounting-box, block or the like, such plates being variously provided (according to the nature of the accessory or combination of accessories in the mounting) with an aperture for the tumbler of a switch, or the push-piece of a bell-push, or/and with a system of entry holes for the pins of a pin-and-socket coupling or couplings.

Having regard to the variety of different accessories or combinations of accessories that can be thus mounted in or upon boxes, blocks and the like, a manufacturer has hitherto only been enabled to meet the cover-plate requirements of the trade by a production equipment enabling the production of a wide range of different cover-plate types or patterns, each individually adapted for use with a given or special kind of accessory or combination and/or arrangement or disposition of accessories. For example, one type or pattern of plate has to be produced for use with single switch-mountings, another for bell-push mounts, another for coupling-socket mounts (a two-hole coupling again requiring a different plate to a three-hole coupling) and others for use with pairs or combinations of switches and/or bell-pushes and for pairs or combinations of two or three-hole couplings or of switches and couplings. Different styles or types of plates have again to be provided where the accessories of a combination are

arranged vertically or one above the other in a box or the like as distinct from combinations where the accessories are mounted horizontally or side-by-side.

This necessity of producing such a wide range of cover-plate styles or patterns involves the manufacturer in heavy costs in tools, particularly in the case of ornamental plates moulded from formaldehyde products or similar materials, the moulding of which involves the use of exceptionally expensive dies, and the present invention proposes a solution of this production-costs problem by methods that enable the making up of a cover plate to suit any ordinary trade requirements by the assembly of an appropriate selection of standardized and interchangeable parts capable of being produced by a relatively small number of dies or tools of inexpensive nature as compared with those required in the methods of production hitherto used.

According to the said invention, a plate to suit specific requirements, or of a given style or type, is constructed or made up by the assembly to a suitably-apertured body or main portion, of one or more separately-produced adapter pieces individually perforated or apertured to make it suitable for a different use, such as with a switch or bell-push (in which case the adapter-piece has only a single aperture or hole to accommodate a switch-tumbler or a bell push-piece) or with a socket coupling where the adapter-piece may have two or three pin-entry holes according to the type of coupling to be covered.

The adapter-pieces, however pierced, are all of the same standardized form and dimensions as the aperture or apertures in the body of the plate, and are thus interchangeable with a body whose form and dimensions also may be standardized. Thus a complete plate to suit any requirements can be made up by selecting a suitably-perforated adapter-piece and assembling it as in the aperture of a standardized plate-body, whilst the manufacture of such standardized and inter-

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changeable parts involves only the provision of simple dies or tools for moulding or making the plate-bodies, and of a series of smaller and relatively inexpensive dies or tools for producing the range of adapter pieces, the invention enables the economic production of a range of cover-plates for meeting the usual trade requirements by virtue of the saving in tool costs which it effects.

In the application of the invention to the production or making up of a cover-plate applicable to flush type or surface-type box or block for mounting only a single switch, or a bell push, or a two-hole or a three-hole coupling, the body member of the plate may be made to any standardized form and dimensions (rectangular, circular, oval or otherwise) and provided with a central or other aperture of suitable dimensions to accommodate an adapter piece, and for selective use with such a body member, a range of, for example, four different types of adapter-pieces may be provided, viz.:—one suitably pierced to take a switch-tumbler, another pierced to accommodate a bell push-piece, a third pierced with two coupling-pin entry-holes and a fourth pierced with three coupling-pin entry holes suitable respectively for use with a two- or three-socket coupling.

In the case of a switch or bell-push adapter-piece, this may be provided with suitably-located screw-holes so that, after the body member of the proposed assembly has been fixed to the front of a box or like mounting, the selected adapter piece can be inserted in the aperture of the said body-member and there secured by passing screws through the holes in the adapter into connection with the covered switch or bell-push. A similar method of assembling and fixing by screws may be adopted in the case of covers for two-hole or three-hole couplings, but preferably, the body member and adapter-piece units are formed with key or locating recesses and projections capable of being engaged with one another by insertion of an adapter into the body-member aperture for positively interlocking the assembled members against relative rotation. For instance, the aperture in the body-member may be formed with a surrounding step on its front side and backs of the interchangeable adapter-pieces are formed to seat in the body-stepping, which latter is gapped at intervals to provide engagements for correspondingly-spaced projections formed on the backs or inner-sides of the adapters.

Where the making up of plate-assemblies for use with two-hole or three-hole

couplings is provided for, it is preferable to use a locating or interlocking system comprising four gaps in the seated body-member aperture and complementary projections on the adapter pieces, and to space these gaps and projections at 90° apart, thus enabling the assembly and location of the selected adapter piece with its coupling-pin entry-holes in either transverse or perpendicular relation to the body-member. The fixing of the selected adapter piece to the coupling in the box or mounting may be effected, after location, by a single screw passed through a central hole in the adapter into connection with the accessory it covers.

In the application of the invention to cover-plates for combinations of accessories, the body-member unit, which would usually be of oblong rectangular form, is pierced with two or more apertures for the accommodation and location of a corresponding number of adapter-pieces selected in accordance with the character of the accessories included in the combination, and where the units of the plate-assembly embody locating or interlocking formations having a 90° spacing or disposition previously referred to, the units can be assembled and interlocked with the holes of the adapters in appropriate relation both to their complementary accessories and to the selected disposition of the body-member upon a box or other mounting. That is to say, where an oblong rectangular body-member is disposed with its major dimension in the horizontal (as when applied to a combination of side-by-side accessories) adapter-units pierced for use with couplings can be so assembled as to locate their entry-holes in a common horizontal plane in the length of the body-member, whereas when such a body-member is fixed with its adapter-apertures one over the other to suit a superimposed combination of accessories, one or other of the adapter-pieces may be so applied and located thereto as to dispose the entry holes in a plane or planes transversely to the length of the body-member.

Instead of providing for the fixing of single-hole adapter-pieces by screws to a cover switch or the like, the hole in the centre of a circular adapter may be threaded to enable the adapter to be rotated into connection with a male thread on the dolly-socket of a switch-bridge or similar support. In such a case, the front of the piece may be formed with Tommy-holes or recesses to afford engagements for a suitable screwing-on tool, whilst the back is devoid of projections so that the piece can be screwed on and off its support without fouling the locating

gaps in the aperture of the plate-body member. Alternatively, the adapter pieces may be peripherally threaded to screw into a threaded aperture in the body-member.

Dated this 28th day of July, 1928.  
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## COMPLETE SPECIFICATION.

### Improvements in or relating to Switch and other Cover Plates such as used in Conjunction with Flush-mounted and Surface Mounted Electrical Accessories.

We, JOHN ASHWORTH CRABTREE, of "Inverell", Rosemary Hill Road, Streetly, Sutton Coldfield, and BERNARD GOUGH HARRISON, of "Ambleside", Birmingham Road, Walsall, both Subjects of the King of Great Britain, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

Where electric switches, coupling-sockets, bell-pushes and like accessories, or combinations of such accessories, are flush-mounted in metal or other boxes or surface-mounted in or upon wall-blocks or other foundations, the usual practice is to cover the mounted accessory or accessories by fixing a cover-plate or facing-plate to the front of the mounting-box, block or the like, which plate is apertured (according to the nature of the accessory or combination of accessories in the mounting) to accommodate one or more switch-tumblers or/and bell-pushes or/and to provide for the insertion therethrough of the pins of one or more plug-in couplings.

Having regard to the variety of different accessories or combinations of accessories that can be mounted in or upon boxes, blocks and the like, a manufacturer has hitherto only been enabled to meet the cover-plate requirements of the trade by a production equipment enabling the production of a wide range of different types or patterns of cover-plate, each individually adapted for use with a given or special kind of accessory or combination and/or arrangement or disposition of accessories. For example, one type or pattern of plate has to be produced for use with single switch-mountings, another for bell-push mounts, another for coupling-socket mounts (a two-hole coupling again requiring a different plate to a three-hole coupling) and others for use with pairs or combinations of switches and/or bell-pushes and for pairs or combinations of two or three-hole coup-

plings or of switches and couplings. Different styles or types of plates have again to be provided where the accessory combinations, including one or more socket couplings are arranged vertically or one above the other in a box or the like as distinct from combinations where the accessories are mounted horizontally or side-by-side.

This necessity of producing such a wide range of cover-plate styles or patterns involves the manufacturer in heavy costs in tools, particularly in the case of ornamental plates moulded from formaldehyde products or similar materials, the moulding of which requires the use of exceptionally expensive dies, and the present invention proposes a solution of this production-costs problem by a method of construction that enables the making up of a cover plate to suit any ordinary trade requirements by the assembly of an appropriate selection of separately-produced and interchangeable units capable of being manufactured by a relative small number of dies or tools of an inexpensive nature compared with the tools required in the production methods hitherto used.

To this end, the invention consists in or comprises a cover-plate for use in conjunction with electrical accessories, constructed or made up by the assembly or location within the aperture or apertures of a suitably-apertured panel unit, of one or more of a range or series of separately-made and interchangeable centre-pieces or adapter units, which individually are suitable for use with a certain accessory, but all are counterparts as regards their capacity of fitting or seating within any aperture of the panel unit.

Thus the invention enables a cover-plate of any of the types or patterns within a given range to be produced or made up as required by selecting the appropriate units from the panel and adapter series and locating and/or securing the selected adapter unit or units within the aperture or apertures of the selected panel unit.

Figures 1 to 4 of the accompanying

drawings show a series of four different cover-plate assemblies made of interchangeable panel and adapter units in accordance with an application of the present invention, respectively suitable for mounting in association with a switch, a bell-push, a two-hole coupling and a three-hole coupling.

A plate assembly applicable for any of these four purposes may be made up by the combination with or application to a panel-unit *a* having a circular aperture *a*<sup>1</sup>, of one or other of four separately-made adapter or centre-piece units, viz. a switch adapter *b* (Figure 1), a bell-push adapter *c* (Figure 2) a two-hole coupling adapter *d* (Figure 3) or a three-hole coupling adapter *e* (Figure 4). Each of these four adapter units consists of a disc of the same diameter as the panel-unit aperture *a*<sup>1</sup>, and they are respectively formed as shown with an aperture or apertures suitably disposed to enable operation of or access to the particular kind of fitting or accessory over which the plate assembly is to be mounted, it being merely necessary, in making up a plate to suit any of the purposes provided for by such a five-unit series, to select the appropriate unit from the adapter series and fix or mount the same within the aperture of the panel unit.

If desired, the adapter-pieces may be inserted and mechanically or otherwise secured in the panel-apertures as a manufacturing or production operation, but where it is intended for the panels and adapters to be supplied to users in separate or loose units to enable them to make up therefrom plate assemblies according to their requirements, the plate and adapter units are so formed that the adapter selected for making up a certain assembly may, after insertion or location within the aperture of a panel unit, be mechanically fastened or connected directly to an electrical accessory and serve to secure the said panel unit to or over the front of the said accessory. In some cases, and in order to ensure correct location of the panel and adapter unit in relation to one another and to their associated accessory, means are embodied in the said units for realizing a positive or mechanical interlock between them when the adapter unit is secured to the accessory.

In the case of adapter units of cover-plate assemblies for use in connection with switches or bell-pushes, the adapters are (as shown in the complete assembly in Figure 2, and separately in Figures 7, 8, and 9) formed with screw-holes *d*<sup>1</sup> for enabling their connection, by fixing screws, to the insulator or other part of a mounted switch or bell-push, or alterna-

tively (as shown in the assembly Figure 1, and separately in Figures 10 and 11) the back of the adapter may be formed with a screw-threaded recess *b*<sup>1</sup> disposed concentrically to the tumbler or push-piece hole *b*<sup>2</sup>, which enables the said adapter, after being positioned over the aperture of its associated panel to be screwed into connection with a correspondingly-threaded part of the accessory. To facilitate such screw assembly, the front of the adapter may be formed with recesses *b*<sup>2</sup> to afford engagements for a forked screw-driver or similar tool. Alternatively, the periphery of the adapter unit and the aperture of the panel unit may be screw-threaded to provide for their assembly by screwing the adapter in the aperture, but in such a case, additional provision (such as fixing-screw holes) would have to be made in the adapter for its connection to the accessory.

Provision for fixing by screws may also be adopted in the case of adapters for two-hole or three-hole couplings, but to enable such adapters to be fixed by a central fixing screw and definitely located in the panel-aperture in one or other of a series of different positions, the panel and adapter units are formed with key or locating recesses and projections capable of being engaged with one another on insertion of the adapter into the panel aperture and thus interlocking the associated units against relative rotation. For instance, and as shown in Figure 5 (which shows a single aperture panel unit), in Figure 6, and in Figures 12 and 13 (respectively shewing two-hole and a three-hole coupling adapter) the aperture in the panel is formed with a shouldering or step *a*<sup>2</sup> on its front side and the backs of the adapter-pieces are formed with similarly-stepped edges to seat in the panel-stepping, which latter is formed at intervals with recesses *a*<sup>3</sup> to provide engagements for correspondingly-spaced keys *a*<sup>2</sup> formed on the edges of the adapters. Preferably four recesses *a*<sup>3</sup> in the seated aperture of the panel plate are spaced at 90° apart, whilst the key-projections on the adapters are, as shown in Figures 12 and 13, suitably spaced for engaging the said recesses, thus enabling the location of the selected adapter piece with its coupling-pin entry-holes in either transverse or perpendicular relation to the panel. The stepped adapter seating in the panel unit and the complementary stepping of the edges of the adapter units (whether the latter are provided or not with key or interlocking formations) enables the adapters to be used as means for clamping or fastening the panel unit

of the assembly in relation to an accessory when the adapter unit is mechanically fixed to the said accessory after the insertion of the adapter into the aperture of the panel from the front of the latter.

In the application of the invention to the construction or making up of cover-plates for use with combinations of accessories, panel units are provided which are pierced with two or more apertures, or two or more rows of apertures, for the accommodation and location of a corresponding number of adapter-units selected in accordance with the character of the accessories with which the plate assembly is to be associated.

Figure 14 shows a two-aperture panel unit and

Figure 15 a three-aperture panel, each aperture of which embodies four adapter-locating recesses having the 90° spacing or disposition previously referred to so that two-hole or three-hole adapter units such as shown in Figures 13 and 14 can be assembled to and interlocked with the panel in appropriate relation both to their complementary accessories and to the position in which the panel is to be mounted in relation to a wall or the like. That is to say, where an oblong rectangular panel is mounted with its major dimension in the horizontal (as when applied to a combination of a side-by-side accessories) coupling adapter-units can be so assembled as to locate their plug-in entry-holes in a common horizontal plane in the length of the body-member, whereas when such a panel is fixed with its adapter-apertures one over the other to suit a superimposed combination of accessories, one or more coupling adapter-units assembled in and interlocked with the panel so that their pin-entry holes are positioned in a plane or planes transversely to the length of the panel.

The whole of the units herein described with reference to the drawings are so formed as to enable their production by moulding from formaldehyde products or similar materials, but it is obvious that the whole or any of the units may be made from metal, earthenware, wood, or other suitable material and that any means or method may be adopted for securing the adapter units within the apertures of the panel units.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A cover-plate for use in conjunction with electrical accessories, constructed or made up by the assembly or location within the aperture or apertures of a suitably-apertured panel unit, of one or more of a range or series of separately-made and interchangeable centre-pieces or adapter units, which individually are suitable for use with a certain accessory, but all are counterparts as regards their capacity of fitting or seating within any aperture of the panel unit.

2. The production or making up of cover-plates as claimed in Claim 1 by the assembly or location within the aperture or apertures of a panel unit, of an adapter unit, or a number of adapter units, selected from a series of adapters which, whilst individually suitable for use in conjunction with a particular kind of accessory, are all so far the counterpart of one another, and of the aperture or apertures in the panel unit as to be interchangeable for enabling any unit of the adapter series to be assembled, positioned or located within the aperture, or any of the apertures, of the panel unit.

3. Interchangeable units for selection and assembly into cover-plates, comprising a series of differently apertured panel-units, and a series of adapter units as referred to in Claim 2.

4. Panel and adapter units as referred to in any of the preceding claims, and which are so formed as to enable the panel unit of a selected combination to be secured in front of, or in relation to, an accessory or combination of accessories by the mechanical connection of the adapter unit or units to its or their associated accessory or accessories.

5. Panel and adapter units as referred to in any of the preceding claims, embodying formations whereby the adapter unit or units may be interlocked with the panel unit when the said adapter unit or units is or are located within the aperture or apertures of the panel and connected with its or their complementary accessory or accessories.

6. Cover-plate panel and adapter units, and panel and adapter assemblies, substantially as herein described with reference to the accompanying drawings.

Dated this 1st day of May, 1929.

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321,184 COMPLETE SPECIFICATION

SHEET 1

Fig. 1.

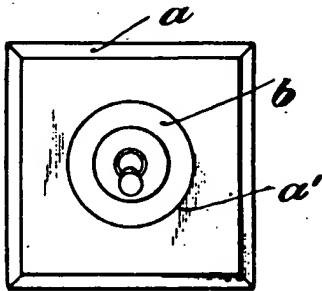


Fig. 3.

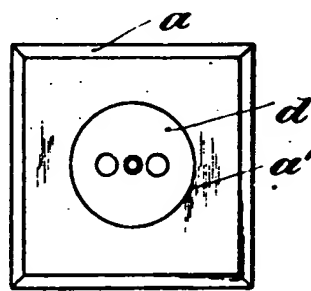


Fig. 2.

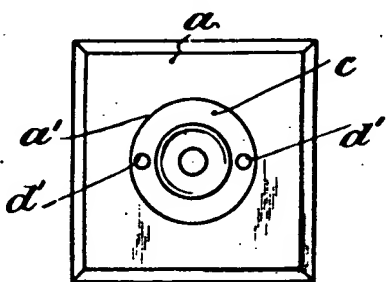


Fig. 4.

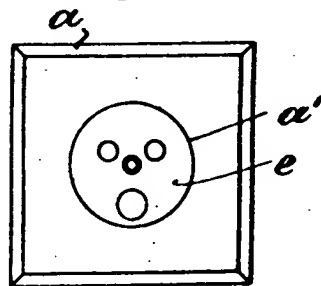


Fig. 5.

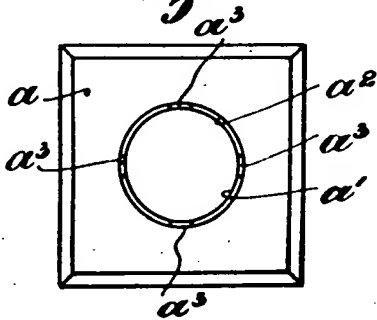
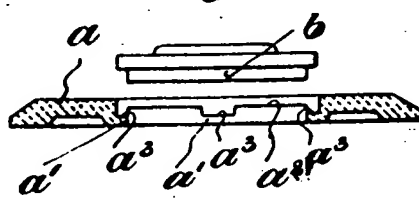


Fig. 6.



[This Drawing is a reproduction of the Original on a reduced scale.]